Claims

1. A method for isolating progenitor cells from a subject, comprising

introducing into a subject an implant that comprises an angiogenic/vasculogenic factor and a bone marrow recruiting factor,

allowing sufficient time for progenitor cells to migrate to the implant, and

removing the implant from the subject.

2. A method for isolating progenitor cells from a subject, comprising

introducing into a subject an implant that comprises at least one growth factor,

allowing sufficient time for progenitor cells to migrate to the implant, and

removing the implant from the subject.

3. The method of claim 2, wherein the at least one growth factor is two growth factors.

4. The method of claim 2, wherein the at least one growth factor is an angiogenic/vasculogenic factor.

5. The method of claim 2, wherein the at least one growth factor is a bone marrow recruiting factor.

6. The method of claim 3, wherein the two growth factors are an angiogenic/vasculogenic factor and a bone marrow recruiting factor.

7. A method of recruiting progenitor cells to a bodily site in a subject, comprising

introducing in a bodily site of a subject an implant that comprises an angiogenic/vasculogenic factor and a bone marrow recruiting factor, and

and allowing sufficient time for progenitor cells to migrate to the implant,

wherein neither factor is bound to the implant.

8. The method of claim 7, wherein the bodily site is remote from the vasculature.

9. The method of claim 7, wherein the implant is comprised in a vascular prosthesis.

10. The method of claim 7, wherein the bodily site is myocardium, vasculature, skin, peritoneum, muscle, pericardium, central nervous system, peripheral nervous system, cranium, gastrointestinal tract, liver, respiratory tissue, lung, kidney, stomach, esophagus, mouth, throat and spine.

11. The method of claim 1, 2 or 7, wherein the progenitor cells are endothelial progenitor cells, hematopoietic progenitor cells, hemangioblasts, neural progenitor cells or epithelial progenitor cells.

12. The method of claim 1, 2 or 7, wherein the subject is a human.

13. The method of claim 1, 2 or 7, wherein the implant comprises a drug delivery system.

14. The method of claim 13, wherein the drug delivery system comprises a plurality of microspheres, microparticles, nanospheres, macrospheres, nanoparticles, macroparticles, matrices, beads, films, rods, coatings or hydrogels.

15. The method of claim 13, wherein the drug delivery system is contained in a mesh housing.

16. The method of claim 1, 2 or 7, wherein the implant comprises a polymer.

17. The method of claim 16, wherein the polymer is biodegradable.

18. The method of claim 15, wherein the mesh housing is non-biodegradable.

19. The method of claim 16, wherein the polymer is a polyanhydride.

20. The method of claim 16, wherein the polymer is poly-L-lactide (PLA), PLGA, a poly(fumaric acid:sebacic acid) or polycaprolactone.

21. The method of claim 1, 4 or 7, wherein the angiogenic/vasculogenic factor is VEGF-A, VEGF-B, VEGF-C, VEGF-D, VEGF-E, aFGF, bFGF, angiopoietin-1, angiopoietin-2, angiogenin, Del-1, follistatin, HGF/SF, leptin, midkine, PLGF, PD-ECGF, PDGF-BB, PTN, progranulin, proliferin, TGF-alpha, TGF-beta, TNF-alpha, IGF-1 or IGF-2.

22. The method of claim 1, 4 or 7, wherein the angiogenic/vasculogenic factor is a VEGF.

23. The method of claim 22, wherein the VEGF is $rhVEGF_{165}$.

24. The method of claim 1, 5 or 7, wherein the bone marrow recruiting factor is GM-CSF, G-CSF, SDF-1α, SDF-1β, MCP-1, stem cell factor/ kit ligand, M-CSF, IL-8, SF20 or HCC-1.

25. The method of claim 1, 5 or 7, wherein the bone marrow recruiting factor is GM-CSF.

26. The method of claim 1, 6 or 7, wherein the angiogenic/vasculogenic growth factor is a VEGF and the bone marrow recruiting factor is GM-CSF.

27. The method of claim 1, 2 or 7, wherein the implant is introduced into the subject intravascularly, subcutaneously, intradermally, intraperitoneally, intramuscularly, intrapericardially, intracranially, gastrointestinally, intra-liver, intra-lung, buccal, intra-kidney, intra-stomach, esophageally, intrathecally and intra-spinal.

28. The method of claim 1, wherein the time for progenitor cells to migrate to the implant is at least 7 days, at least 14 days, at least 21 days, or at least 28 days.

29. The method of claim 1 or 2, wherein to migrate to the implant comprises adhering to the implant.

30. The method of claim 1 or 2, wherein to contact the implant comprises entering the implant.

31. The method of claim 1, 2 or 7, further comprising isolating the progenitor cells from the implant.

32. The method of claim 31, further comprising culturing the progenitor cells.

33. The method of claim 31, further comprising re-introducing the progenitor cells into a recipient subject.

34. The method of claim 33, wherein the progenitor cells are re-introduced into the recipient subject after the recipient subject has undergone chemotherapy, radiation, balloon angioplasty, cosmetic surgery, cardiac surgery, myocardial infarction, transient ischemic attack or ischemia.

35. The method of claim 33, wherein the progenitor cells are re-introduced into the recipient subject that has a neurodegenerative disease.

36. The method of claim 35, wherein the neurodegenerative disease is Alzheimer's disease, Parkinson's disease, ALS or MS.

37. The method of claim 33, wherein the subject and the recipient subject are the same.

38. The method of claim 33, wherein the subject and the recipient subject are allogeneic.

39. The method of claim 14, wherein a first subset of the plurality comprises an angiogenic/vasculogenic factor and a second subset of the plurality comprises a bone marrow recruiting factor.

40. The method claim 14, wherein at least a subset of the plurality comprises both an angiogenic/vasculogenic factor and a bone marrow recruiting factor.

41. The method of claim 1, 2 or 7, wherein the progenitor cells are $CD133^{+}$.

42. The method of claim 1, 2 or 7, wherein the progenitor cells are CD34+.

43. The method of claim 13, wherein the drug delivery system is prepared using phase inversion nanoencapsulation (PIN).